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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/790,128	03/02/2004	Yasushi Tomioka	503.39601CX1	2897
20457	7590	11/19/2004		
ANTONELLI, TERRY, STOUT & KRAUS, LLP 1300 NORTH SEVENTEENTH STREET SUITE 1800 ARLINGTON, VA 22209-9889			EXAMINER CHOWDHURY, TARIFUR RASHID	
			ART UNIT 2871	PAPER NUMBER

DATE MAILED: 11/19/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/790,128

Applicant(s)

TOMIOKA ET AL.

Examiner

Tarifur R Chowdhury

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 26 August 2004.
- 2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 12-23 is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 02 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☒ Certified copies of the priority documents have been received in Application No. 09/779,458.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Claim Objections*

1. Claim 13 is objected to because of the following informalities: In claim 13, line 12, "larger a" should be changed to --larger than a--.
2. Appropriate correction is required.

### *Claim Rejections - 35 USC § 103*

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

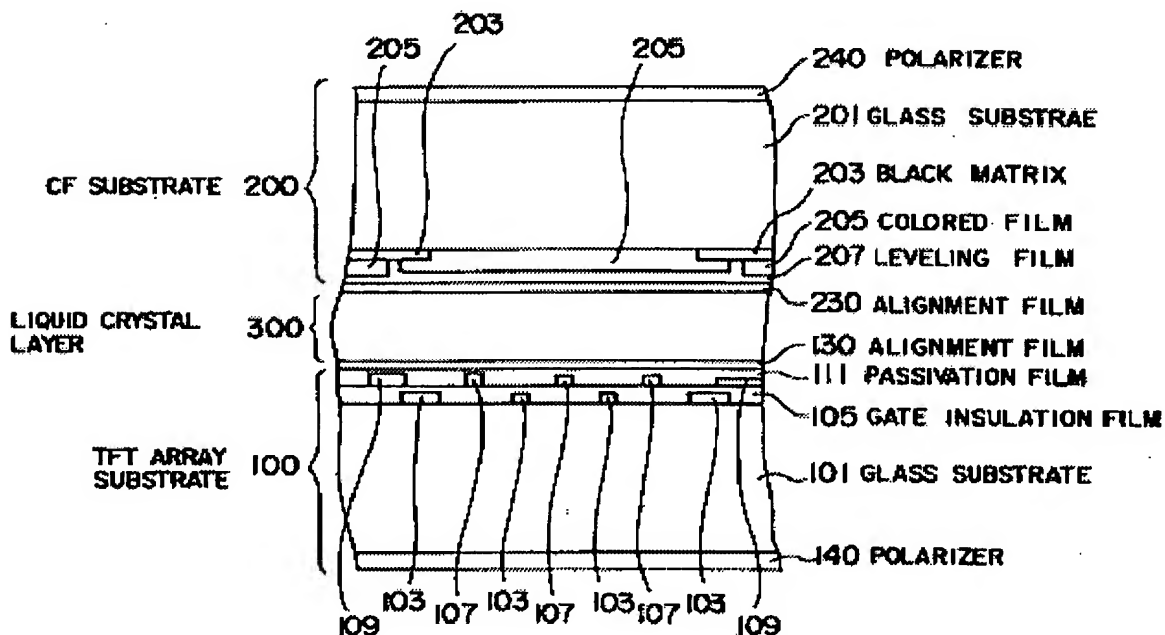
(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. **Claims 1-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Matsumoto et al., (Matsumoto), USPAT 6,078,375 in view of Sunohara et al., (Sunohara), USPAT 5,596,435.**

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6. Matsumoto shows in Fig. 8 and related disclosures, a liquid crystal display device comprising a pair of substrates ((101, 201), at least one of the substrates being transparent; a liquid crystal layer (300) interposed between the pair of substrates; and pixel electrodes (107) and common electrodes (103) and active elements arranged on the TFT substrate, liquid crystal of the liquid crystal layer being controlled to perform display by applying a voltage between the pixel electrode and the common electrode, wherein

**FIG. 8**

alignment layers (130, 230) is formed on a surface in contact with the liquid crystal layer of each of the pair of substrates.

Matsumoto differs from the claimed invention because they do not explicitly disclose that the alignment layer is made of an organic polymer selected from the group consisting of polyamic acid group polymers and polyimide ester group polymers having a relative imidization ratio of above 60% to less than 90%.

Sunohara discloses a liquid crystal display including alignment layers wherein the alignment layers are made of organic polymer selected from the group consisting of polyamic acid group polymers and polyimide ester group polymers having a relative imidization ratio of not less than 90% (abstract) and using such a polyimide film provides an excellent result (col. 15, lines 36-38). Sunohara further discloses that however it is also possible to employ a polyimide having a relative imidization ratio of less than 90%, provided that a positive resist is to be employed and problems such as deterioration of display quality resulting from peeled or removed products from the surface of the positive resist can be avoided (col. 15, lines 38-45). Sunohara also discloses that such alignment layers provide a display that is free from fault in display performance (col. 2, lines 33-35).

Sunohara is evidence that ordinary workers in the art of liquid crystal would find a reason, suggestion or motivation to use alignment layers that is made of an organic polymer selected from the group consisting of polyamic acid group polymers and polyimide ester group polymers having a relative imidization ratio in a range from above 60% to less than 90%.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify the display of Matsumoto such that the

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alignment layers are made of an organic polymer selected from the group consisting of polyamic acid group polymers and polyimide ester group polymers having a relative imidization ratio in a range from above 60% to less than 90%, problems such as deterioration of display quality resulting from peeled or removed products from the surface of the positive resist can be avoided, as per the teachings of Sunohara.

Accordingly, claims 1, 2 and 11 would have been obvious.

As to claim 3, Matsumoto discloses that the active element is a thin film transistor.

As to claims 4 and 5, it is common and known in the art to use transparent electric conductive film such as ion doped titanium oxide or an ion doped zinc oxide film to form pixel or common electrodes and thus would have been obvious to avail a proven material.

As to claim 6, it is common and known in the art of liquid crystal to impose alignment control directions that is nearly equal to each other for several reasons such as to improve display quality, aperture ratio, viewing angle etc., and thus would have been obvious.

As to claim 7, Sunohara discloses the use of methyl ester group as the polyamic acid group organic polymer.

As to claim 10, Matsumoto discloses that the preferable pre-tilt angle of the liquid crystal layer is in a range of 3 to 8 degrees (col. 2, lines 45-47) (overlaps the claimed range at 3-4 degrees).

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**7. Claims 8 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Matsumoto and Sunohara as applied to claims 1-7, 10 and 11 above and in view of Yoneya et al., (Yoneya), USPAT 5,928,733.**

8. Matsumoto when modified by Sunohara differs from the claimed invention because of not explicitly disclosing the limitation such as one of the alignment layer being made of a photo-reactive material. Formed by irradiating linearly polarized light.

Yoneya discloses a liquid crystal display device wherein the alignment layers are made of photo-reactive material formed by irradiating linearly polarized light (abstract). Yoneya also discloses that alignment control means such as the photo-reactive alignment layer is capable of improving the practical aspects of display such as mass productivity in combination with the in-plane switching mode (col. 13, lines 42-52).

Yoneya is evidence that ordinary workers in the art would find a reason, suggestion or motivation to use alignment layers that are made of photo-reactive material.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to use alignment layers that are made of photo-reactive materials and are formed by irradiating linearly polarized light onto the layer in the device of Matsumoto when modified by Sunohara since photo-reactive alignment layer is capable of improving the practical aspects of display such as mass productivity in combination with the in-plane switching mode, as per the teachings of Yoneya.

Accordingly, claims 8 and 9 would have been obvious.

***Allowable Subject Matter***

9. Claims 12-23 are allowed.

***Response to Arguments***

10. Applicant's arguments filed on 08/26/04 have been fully considered but they are not persuasive.

In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

Further, in response to applicant's argument that Matsumoto fail to disclose that the imidization ratio less than 90%, applicant's attention is respectfully pointed out to the rejection above.

***Conclusion***

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).



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A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tarifur R Chowdhury whose telephone number is (571) 272-2287. The examiner can normally be reached on M-Th (6:30-5:00) Friday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Kim can be reached on (571) 272-2293. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

TRC  
November 02, 2004



TARIFUR R. CHOWDHURY  
PRIMARY EXAMINER